REMARKS

Claims 61 – 81 remain in the application.

Claims 77 – 79 are allowed.

Claims 61 – 76, 80 and 81 remain for consideration.

The Rejection Under 35 U.S.C. §112,¶s 1 and 2

The rejection under 35 U.S.C. ¶112, ¶1 is not understood . The rejection provides that "the claimed invention is not described in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same." The Examiner does not explain the deficiencies in the specification that support this rejection, and provides no reasons why the specification is defective.

This application is a continuation of the following granted U.S. Patents: 6,443,622; 6,640,438; 6,688,773; and 6,702,474. This application also contains allowed claims 77 - 79. The adequacy of the disclosure under 35 U.S.C. §112, ¶1 has never been questioned.

Rejections under 35 U.S.C. §112, ¶1 are discussed in MPEP §2161 - 2165.04, and in MPEP §706.03(c). Rejections under 35 U.S.C. §112, ¶1 relate to the Description Requirement, Enablement, Scope of Enablement, Best Mode Requirement, and Essential Subject Matter Missing From Claims. None of these apply to the claims of the present application, and the rejection under 35 U.S.C. §112, ¶1 is inappropriate.

Claims 61 and 62 include both reference numerals and words in parenthesis for explaining a claim recitation. The fifth subparagraph of claim 61 recites the annular end portion 71 in FIG. 4 as decreasing in radial thickness along its length, and includes the explanation

"(between outer surface 71a and inner surface 72, 74)." Claim 62 recites the diagonal thickness of the formed end 20 in FIG. 3 between inside corner 56 and outside intersection C, and includes the explanation "(between 56 and C)." The Examiner indicates that "claiming in parenthesis [between ...] is not permissible."

Reference numerals were added to the claims in response to repeated rejections under 35 U.S.C. §112 on grounds that the claims could not be understood. This is permitted by MPEP §608.01(m) with the understanding that the use of reference characters in the claims is to be considered as having no effect on the scope of the claims. The Examiner does not object to the reference characters, but to the explanatory material in parenthesis that includes both words and reference characters.

While the use of both text and reference numerals in parenthesis may give rise to a lack of clarity objection, such is not the case here. No person of ordinary skill in the art could possibly believe that the objectionable items are part of the claim instead of mere explanatory material just like all of the other numerals in parenthesis. The objectionable material was added to the claims to assist the Examiner in understanding what is being claimed, and to overcome his rejections on grounds that the claims were not understandable. There is nothing wrong with the objectionable items that simply make it more clear as to what is being claimed, and the rejection under 35 U.S.C. §112 with respect to including both text and numerals as explanatory material in parenthesis in a claim is without merit.

The claims also are rejected under 35 U.S.C. §112 on grounds that recitation of features of the preform shape in FIG. 4 make the claims confused and unclear. The Examiner indicates that all reference to the preform should be purged from the claims.

It is plain that the claims are directed to a formed end. The preamble of claims 61 and 80 recite the combination of a spindle having a component secured thereto by a formed end. Claim 70 recites an assembly wherein a component is secured on a spindle by a formed end. All of these claims also recite the final shape of the formed end that secures the component on the spindle. That the claims also recite the preform configuration is not grounds for rejection under 35 U.S.C. §112, ¶2. There is nothing indefinite or unclear about claiming both final and original configurations of a spindle end portion that is deformed into a formed end. The original or preform configuration of the deformable spindle end portion is important for producing a formed end that will not distort the component that is secured on the spindle, and that will not fracture or develop cracks.

It has long been acceptable practice in this art to claim both final and original configurations of a deformed spindle end portion. The same Examiner that is examining the present application also examined U. S. Patent No. 6,113,279 granted March 30, 1998, to Sawai et al. Subparagraphs 7 and 8 of claims 1, 3 and 4, and subparagraphs 8 and 9 of claim 5, recite the preform shape and how it is deformed to produce the caulked portion (the formed end). These are the same type of recitations that the Examiner is objecting to in the present application.

U.S. Patent No. 5,490,732 to Hofmann et al., the reference applied against the claims of the present application, includes claims 4 and 5 that recite the configuration of the spindle before it is deformed. It is not acceptable to use the well-worn excuse that mistakes that were made in the past do not justify continuation of the same type of mistakes. The fact is that there was no mistake, and claiming a final shape while also reciting the beginning shape is perfectly proper and has long been accepted in this art by the U.S. Patent and Trademark Office. The rejection under 35 U.S.C. §112 improperly bears on the validity of allowed claims 77 - 79 in

this application and of the claims in granted U.S. Patent Nos. 6,443,622 and 6,702,474, some of which include recitations of the spindle configuration before it is deformed.

Recitations of the type complained of by the Examiner are proper when they are necessary to give life, meaning and vitality to the claim as explained in MPEP §2111.02.

That the claims also recite features of the preform does not render the claims unclear or indefinite. The claims are perfectly understandable when read by using the reference numerals in the claims to refer to FIGS. 3 and 4 of the drawing. The claims recite characteristics of a formed end that is produced by starting with a preform having certain characteristics. There is no basis for the Examiner's requirement that all recitations to the preform be stricken from the claims. The rejection under 35 U.S.C. §112, ¶s 1 and 2 is without merit and should be reversed.

The Rejection Under 35 U.S.C. §102(e)

U. S. Patent No. 5,490,732 to Hofmann et al discloses a formed end on a spindle for holding a component on the spindle. The outer periphery of the formed end or bead 9 includes an inner sharp corner engaging an end face of the component 3 and an outer sharp corner adjacent the angle alpha. The radial outer end of the formed end 9 bulges outwardly between the inside and outside corners, and the outer corner is spaced farther away from the spindle axis than the inside corner.

The Hoffmann et al patent refers to a hub barrel 10 in lines 7, 19 and 23 of column 3. The barrel of the hub also is referred to in lines 46 - 48, 52, 54 and 67 of column 1, and in line 10 of column 2. There is no numeral 10 in the drawing. However, from the description in lines 48 and 49 of column 1, and lines 1 - 3 of column 2, it is apparent that the "barrel" is the part of the hub 1 that is deformed into the formed end or bead 9.

Line 13 of column 2 indicates that the dimension S is the thickness of the barrel that is to be deformed. It is plain from Fig. 3 that dimension S is misplaced, and should be placed above its present location so that it would indicate the thickness of the barrel before it is deformed into the bead or formed end 9. There is no suggestion whatsoever that the original shape of the barrel includes a tapered inner surface. In fact, the only suggestion is that the original shape of the barrel includes parallel cylindrical inner and outer surfaces, and a uniform thickness S along its entire length as indicated by the shadow lines in Fig. 3. The outer portion of the bead or formed end 9 is thinner because it is on a much larger circumference than the circumference prior to outward deformation thereof.

The Claims

Claim 61

The claim recites the peripheral outside corner 64 of the formed end as being located closely adjacent the outer face 32 of the component 26. Hofmann et al has two peripheral corners, an inside corner located closely adjacent the end face of the component 3, and an outer corner that is spaced a significant distance axially outwardly from the component end face and not located closely adjacent the end face of the component as claimed.

The claim recites the curved outside surface 60 of the formed end 20 as being continuously curved from the peripheral outside corner 64 so that a point traveling along the curved outside surface 60 moves both radially inwardly of the spindle axis and axially outwardly. The formed end 9 in Hofmann et al has its end portion extending radially outwardly of the spindle axis along the bulged end portion when proceeding from the inner corner of the formed end outer periphery rather than radially inwardly as claimed.

The claim recites the spindle as having an inclined inner beveled surface 68, a tapered inner surface 72, 74 and an outer end 78. The claim recites the spindle as being deformed so that its outer end 78 and at least a portion of its tapered inner surface 72, 74 are formed into a single curved outside surface 60 on the formed end 20. Hofmann et al has a radial surface adjacent the lead line for numeral 9' rather than an inclined beveled surface 68 as claimed. Hofmann et al does not disclose a tapered inner surface on the spindle deformable end portion , and does not disclose deformation of the spindle end portion so that its outer end and at least a portion of the inner surface are formed into a single curved outside surface as claimed. The outer end of the spindle in Hofmann et al simply is bulged outwardly and does not become a part of the outer surface of the formed end.

Claim 70

This claim recites the inclined inner beveled surface 68; the tapered inner surface 72,74; the intersection C between the beveled surface and the tapered inner surface; the intersection of the formed end outer surface 60, 62, 66 with the intersection C; the location of the intersection C diagonally opposite from the inside corner 56 of the formed end; the peripheral outside corner 64 of the formed end located closely adjacent the outer face 32 of the component; and the shape of the outside surface of the formed end 20 from the peripheral outside corner 64 toward the spindle axis. It is plain that Hofmann et al does not disclose these claimed features.

Claims 62 and 71

The claims recite the formed end as merging with the spindle outer surface at an inside corner 56, and the outside surface 60, 62, 66 of the formed end as merging with the spindle inner beveled surface 68 at an outside intersection. The outside surface of the formed end in Hofmann et al does not merge with any inner beveled surface.

Claims 63, 69 and 81

The claims recite the intersection C between the spindle inclined inner beveled surface 68 and the outside surface 60, 62, 66 of the formed end 20 as being located generally diagonally opposite from the inside corner 58. The continuation of the outside surface of the formed end in Hofmann et al intersects the radial surface adjacent the lead line for numeral 9' well inside the spindle bore and not diagonally opposite from the inside corner of the formed end as claimed.

Claims 64 and 72

The claims recite the deformable annular end portion 71 of the spindle 14 as being deformed along its length from adjacent the intersection C of the spindle inclined inner beveled surface with the tapered inner surface to its outer end 78. The Hoffman spindle barrel is not deformed from adjacent an intersection of an inner tapered surface with an inner beveled surface.

Claims 65 and 73

The claims recite the curved outside surface 60 of the formed end 20 as merging into a generally flat outside surface 62 that extends toward the spindle rotational axis X from the curved outside surface 60. Hofmann et al does not disclose the claimed flat outside surface.

Claims 66 and 75

The claims recite the diagonal thickness of the formed end diagonally between the inside corner 56 and the outside intersection C. Hofmann et al. does not disclose an outside intersection between a beveled surface and an outer surface of a formed end that is located diagonally across from an inside corner.

Claims 67 and 74

The claims recite the formed end as tapering to a relatively sharp rounded edge at its peripheral outside corner as disclosed in lines 13-15 of the originally filed specification. Hofmann et al. does not disclose such a peripheral outside corner on the formed end.

Claims 68 and 76

The claims recite the inner beveled surface 72,74 of the deformable spindle end portion 71 as intersecting the inclined inner beveled surface 68. The claims further recite the deformable end portion 71 as being deformed along its length from adjacent its intersection C with the inner beveled surface 68 to its outer end 78. The spindle end portion in Hofmann et al is not deformed along its length from adjacent its intersection with the radial surface near the lead line for numeral 9'. The beginning of the deformation in Hofmann et al is spaced a significant axial distance from the radial surface adjacent the lead line for numeral 9'.

Claim 80

The claim recites the spindle as having a deformable annular end portion 71 with a tapered inner surface 72, 74 that intersects an inclined inner beveled surface 68 that is inclined inwardly toward the spindle axis from the tapered inner surface. The tapered inner surface is recited as tapering outwardly away from the spindle axis from its intersection C with the inclined inner beveled surface 68 toward the outer end 78 of the deformable end portion 71.

The claim recites the deformable annular end portion 71 as being deformed so that the tapered inner surface 72, 74 is outwardly deformed along its length from adjacent its intersection C with the inner beveled surface 68 to its outer end 78. Hofmann et al does not disclose a tapered inner surface on the deformable end portion of the spindle. Hofmann et al

does not deform the spindle end portion along its length from adjacent the intersection with the spindle end portion inner surface with the radial surface near the lead line for numeral 9'. Hofmann et al does not disclose a formed end that minimizes the possibility of fracturing or developing cracks, and that minimizes the possibility of distorting the component that is secured on the spindle.

In the absence of more pertinent art, this application is now in condition for allowance.

Respectfully submitted,

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